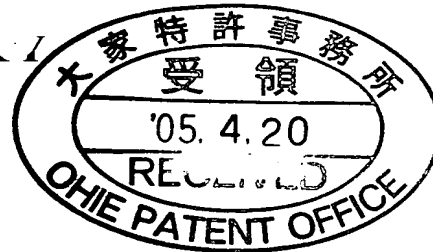


# PATENT COOPERATION TREATY



From the  
INTERNATIONAL SEARCHING AUTHORITY

To:  
OHIE Kunihisa

OHIE PATENT OFFICE  
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## PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY  
(PCT Rule 43bis.1)

Date of mailing (day/month/year) **19. 4. 2005**

Applicant's or agent's file reference  
SDF-5274PCT

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/JP2004/019835

International filing date (day/month/year)  
28.12.2004

Priority date (day/month/year)  
05.01.2004

International Patent Classification (IPC) or both national classification and IPC

Int.Cl.<sup>7</sup> H01M4/02 H01M4/62 H01M4/04 H01M4/66 H01M4/58 H01M10/40 H01M6/16

Applicant  
SHOWA DENKO K.K.

**1. This opinion contains indications relating to the following items:**

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

**2. FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

**3. For further details, see notes to Form PCT/ISA/220.**

Date of completion of this opinion **04.04.2005**

Name and mailing address of the ISA/JP

**Japan Patent Office**

3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan

Authorized officer

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4X 9351

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/JP2004/019835

**Box No. I      Basis of the opinion**

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing  
☐ table(s) related to the sequence listing

b. format of material

- ☐ in written format  
☐ in computer readable form

c. time of filing/furnishing

- ☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE  
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**Box No. III      Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application

☒ claims Nos. 3-32

because:

☐ the said international application, or the said claims Nos. \_\_\_\_\_  
relate to the following subject matter which does not require an international preliminary examination (*specify*):

☐ the description, claims or drawings (indicate particular elements below) or said claims Nos. \_\_\_\_\_  
are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. \_\_\_\_\_ are so inadequately supported  
by the description that no meaningful opinion could be formed.

☒ no international search report has been established for said claims Nos. 3-32

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the  
Administrative Instructions in that:

the written form      ☐ has not been furnished  
                                 ☐ does not comply with the standard

the computer readable form      ☐ has not been furnished  
   ☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing do not comply with the technical requirements  
provided for in Annex C-bis of the Administrative Instructions in that the computer readable form:

☐ has not been furnished  
☐ does not comply with the technical requirements

☐ See Supplemental Box for further details.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

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Box No. IV Lack of unity of invention

1. In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has:

- ☐ paid additional fees  
☐ paid additional fees under protest  
☒ not paid additional fees

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is

- ☐ complied with  
☒ not complied with for the following reasons:

The inventions of claims 1-21, 33-37 are linked to be one another only in respect of the feature "A negative electrode material for a lithium battery characterized by comprising a carbonaceous negative electrode active substance having a specific surface area of  $1\text{m}^2/\text{g}$  or more, a binder formed of styrene-butadiene rubber and a carbon fiber having a fiber diameter of 1-1000nm". However, this feature is disclosed in a prior art document JP 11-176442 A (MATSUSHITA ELECTRIC IND CO LTD), 1999.07.02. Therefore the feature cannot be a special technical feature and there exists no special technical feature linking the inventions of claims 1-21, 33-37 as to form a single general inventive concept among the inventions.

Therefore there are no technical relationship which is considered as "special technical feature" (PCT rule 13.2) among the claims 1-21, 33-37.

The inventions of claims 22-29 are about "a method for producing a composition for forming a negative electrode material for a lithium battery", while the inventions of claims 30-32 are about "a composition for forming a negative electrode material for a lithium battery".

Therefore, this application contains the following groups of invention which are not so linked as to form a single inventive concept under PCT rule 13.2.

Group 1: Claims 1-2, 33-37	Group 2: Claim 3
Group 3: Claims 4-6	Group 4: Claim 7
Group 5: Claims 8, 11	Group 6: Claim 9
Group 7: Claim 10	Group 8: Claim 12
Group 9: Claim 13	Group 10: Claim 14
Group 11: Claims 15, 21	Group 12: Claim 16
Group 13: Claims 17, 18, 20	Group 14: Claim 19
Group 15: Claims 22-29	Group 16: Claims 30-32

4. Consequently, this opinion has been established in respect of the following parts of the international application:

- ☐ all parts.  
☒ the parts relating to claims Nos. 1-2, 33-37

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	2	YES
	Claims	1, 33-37	NO
Inventive step (IS)	Claims		YES
	Claims	1, 2, 33-37	NO
Industrial applicability (IA)	Claims	1, 2, 33-37	YES
	Claims		NO

2. Citations and explanations

D1: JP 11-176442 A (MATSUSHITA ELECTRIC IND CO LTD)  
1999.07.02, [0013] ~ [0030]

The subject matter of claims 1, 33-37 does not appear to be novel in view of the D1 cited in the ISR.

D1 discloses "A negative electrode material for a lithium battery characterized by comprising a carbonaceous negative electrode active substance having a specific surface area of 0.7-5.0m<sup>2</sup>/g, a binder formed of styrene-butadiene rubber and a carbon fiber having a fiber diameter of 100-300nm, which is produced by applying the composition for forming the negative electrode material for a lithium battery onto a metallic collector foil, especially copper foil having a thickness of 20 μm, and drying the thus-applied composition, followed by pressure molding". And D1 also discloses "a lithium secondary battery comprising the said negative electrode material for a lithium battery, which comprises ethylene carbonate and diethyl carbonate as a non-aqueous electrolyte".

The subject matter of claim 2 does not appear to involve an inventive step in view of the D1 cited in the ISR.

The technical feature "styrene-butadiene rubber is in the form of fine particles having an average particle size of 10 to 500nm", is not disclosed in D1. However, it is easy for the skilled person in the art to decide the desirable average particle size range in order to distribute SBR particles uniformly in a carbonaceous negative electrode active substance.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2004/019835

Box No. VI Certain documents cited

1. Certain published documents (Rules 43bis.1 and 70.10)

<u>Application No. Patent No.</u>	<u>Publication date (day/month/year)</u>	<u>Filing date (day/month/year)</u>	<u>Priority date (valid claim) (day/month/year)</u>
JP 2005-4974 A	06/01/2005	09/06/2003	

「E, X」

2. Non-written disclosures (Rules 43bis.1 and 70.9)

<u>Kind of non-written disclosure</u>	<u>Date of non-written disclosure (day/month/year)</u>	<u>Date of written disclosure referring to non-written disclosure (day/month/year)</u>
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